

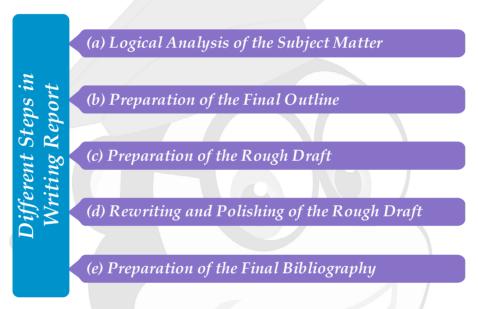
12. Report Writing

Significance of Report Writing

Research report is considered a major component of the research study for the research task remains incomplete till the report has been presented and/or written. As a matter of fact even the most brilliant hypothesis, highly well designed and conducted research study, and the most striking generalization and findings are of little value unless they are effectively communicated to others.

Different Steps in Writing Report

Research reports are the product of slow, painstaking, accurate inductive work. The usual steps involved in writing report are :



- (a) Logical Analysis of the Subject Matter: It is the first step which is primarily concerned with the development of a subject. There are two ways in which to develop a subject (a) logically and (b) chronologically. The logical development is made on the basis of mental connections and associations between the one thing and another by means of analysis. Logical treatment often consists in developing the material from the simple possible to the most complex structures. Chronological development is based on a connection or sequence in time or occurrence. The directions for doing or making something usually follow the chronological order.
- **(b) Preparation of the Final Outline :** *Outlines are the framework upon which long written works are constructed.* They are an aid to the logical organisation of the material and a reminder of the points to be stressed in the report.
- (c) Preparation of the Rough Draft: This follows the logical analysis of the subject and the preparation of the final outline. Such a step is of utmost importance for the researcher now sits to write down what he has done in the context of his research study. He will write down the procedure adopted by him in collecting the material for his study along with various limitations faced by him, the technique of analysis adopted by him, the broad findings and generalizations and the various suggestions he wants to offer regarding the problem concerned.



- (d) Rewriting and Polishing of the Rough Draft: Usually this step requires more time than the writing of the rough draft. The careful revision makes the difference between a mediocre and a good piece of writing. While rewriting and polishing, one should check the report for weaknesses in logical development or presentation. The researcher should also (i) see whether or not the material, as it is presented, has unity and cohesion (ii) the report stand upright and firm and exhibit a definite pattern. In addition the researcher should give due attention to the fact that in his rough draft he has been consistent or not. He should check the mechanics of writing–grammar, spelling and usage.
- (e) Preparation of the Final Bibliography: Next in order comes the task of the preparation of the final bibliography. The bibliography, which is generally appended to the research report, is a list of books in some way pertinent to the research which has been done. It should contain all those works which the researcher has consulted. The bibliography should be arranged alphabetically and may be divided into two parts; the first part may contain the names of books and pamphlets, and the second part may contain the names of magazine and newspaper articles. Generally, this pattern of bibliography is considered convenient and satisfactory from the point of view of reader, though it is not the only way of presenting bibliography. The entries in bibliography should be made adopting the following order:

Types of Reports

Research reports very greatly in length and type. In each individual case, both the length and the form are largely dictated by the problems at hand. We give a few details about the said two types of reports:

(a) **Technical Report :** In the technical report the main emphasis is on (i) the methods employed, (ii) assumptions made in the course of the study, (iii) the detailed presentation of the findings including their limitations and supporting data.

A general outline of a technical report can be as follows:

- (i) Summary of results: A brief review of the main findings just in two or three pages.
- (ii) Nature of the study: Description of the general objectives of study, formulation of the problem in operational terms, the working hypothesis, the type of analysis and data required, etc.
- (iii) Methods employed: Specific methods used in the study and their limitations. For instance in sampling studies we should give details of sample design viz., sample size, sample selection, etc.
- **(iv) Data**: Discussion of data collected, their sources, characteristics and limitations. If secondary data are used, their suitability to the problem at hand be fully assessed. In case of a survey, the manner in which data were collected should be fully described.
- **(v) Analysis of data and Presentation of findings :** The analysis of data and charts be fully narrated. This, in fact, happens to be the main body of the report usually extending over several chapters.
- **(vi) Conclusions**: A detailed summary of the findings and the policy implications drawn from the results be explained.



- (vii) Bibliography: Bibliography of various sources consulted be prepared and attached.
- **(viii) Technical appendices :** Appendices be given for all technical matters relating to questionnaire, mathematical derivations, elaboration on particular technique of analysis and the like ones.
- (ix) Index: Index must be prepared and be given invariably in the report at the end.

The order presented above only gives a general idea of the nature of a technical report; the order of presentation may not necessarily be the same in all the technical reports. This, in other words, means that the presentation may vary in different reports; even the different sections outlined above will not always be the same, nor will all these sections appear in any particular report.

It should, however, be remembered that even in a technical report, simple presentation and ready availability of the findings remain an important consideration and as such the liberal use of charts and diagrams is considered desirable.

(b) Popular Report : The popular report is one which gives emphasis on simplicity and attractiveness. The simplification should be sought through clear writing, minimization of technical, particularly mathematical, details and liberal use of charts and diagrams. Attractive layout along with large print. Many subheadings, even an occasional cartoon now and then is another characteristic feature of the popular report. Besides, in such a report emphasis is given on practical aspects and policy implications.

We give below a general outline of a popular report.

- (i) The Findings and Their Implications: Emphasis in the report is given on the findings of most practical interest and on the implications of these findings.
- **(ii) Recommendations for Action :** Recommendations for action on the basis of the findings of the study made in this section of the report.
- (iii) Objective of The Study: A general review of how the problem arise is presented along with the specific objectives of the project under study.
- **(iv) Methods Employed :** A brief and non-technical description of the methods and techniques used, including a short review of the data on which the study is based, is given in this part of the report.
- **(v) Results**: This section constitutes the main body of the report wherein the results of the study are presented in clear and non-technical terms with liberal use of all sorts of illustrations such as charts, diagram and the like ones.
- **(vi) Technical Appendices :** More detailed information on methods used, forms, etc. is presented in the form of appendices. But the appendices are often not detailed if the report is entirely meant for general public.

There can be several variations of the form in which a popular report can be prepared. The only important thing about such a report is that is gives emphasis on simplicity and policy implications from the operational point of view, avoiding the technical details of all sorts to the extent possible.



Mechanics of Writing a Research Report

The following points deserve mention so far as the mechanics or writing a report are concerned:

- (i) Size and Physical Design: The manuscript should be written on unruled paper 8 1/2 × 11 in size. If it is to be written by hand, then black or blue-black ink should be used. A margin of at least one and one-half inches should be allowed at the left hand and of at least half an inch at the right hand of the paper. There should also be one-inch margins, top and bottom. The paper should be neat and legible. If the manuscript is to be typed, then all typing should be double-spaced on one side of the page only except for the insertion of the long quotations.
- (ii) Procedure: Various steps in writing the report should be strictly adhered (All such steps have already been explained earlier in this chapter).
- (iii) Layout: Keeping in view the objective and nature of the problem, the layout of the report should be thought of and decided and accordingly adopted (The layout of the research report and various types of reports have been described in this chapter earlier which should be taken as a guide for report-writing in case of a particular problem).
- **(iv) Treatment of Quotations :** Quotations should be placed in quotation marks and double spaced, forming an immediate part of the text, but if a quotation is of a considerable length (more than four or five type written lines) then it should be single-spaced and indented at least half an inch to the right of the normal text margin.
 - (v) The Footnotes: Regarding footnotes one should keep in view the followings:
 - (a) In other words, footnotes are meant for cross references, citation of authorities and sources, acknowledgment and elucidation or explanation of a point of view. It should always be kept in view that footnote is not an end nor a means of the display of scholarship. The modern tendency is to make the minimum use of footnotes for scholarship does not need to be displayed.
 - (b) Footnotes are placed at the bottom of the page on which the reference or quotation which they identify or supplement ends. Footnotes are customarily separated from the textual material by a space of half an inch and a line about one and a half inches long.
 - (c) Footnotes should be numbered consecutively, usually beginning with 1 in each chapter separately. The number should be put slightly above the line, say at the end of a quotation. At the foot of the page, again, the footnote number should be indented and typed a little above the line. Thus, consecutive numbers must be used to correlate the reference in the text with its corresponding note at the bottom of the page, except in case of statistical tables and other numerical material, where symbols such as the asterisk (*) or the like "one may be used to prevent confusion.
 - (d) Footnotes are always typed in single space though they are divided from one another by double space.
- (vi) Documentation Style: Regarding documentation, the first footnote reference to any given work should be complete in its documentation, giving all the essential facts about the edition used. Such documentary footnotes follow a general sequence.



The common order may be described as under:

(A) Regarding the Single-Volume Reference :

- (a) Author's name in normal order (and not beginning with the last name as in a bibliography) followed by a comma;
- (b) Title of work, underlined to indicate italics;
- (c) Place and date of publication;
- (d) Pagination references (The page number).

Example : John Gassner, Master of the Drama, New York : Dover Publications, Inc. 1954, p. 315.

(B) Regarding Multivolumed Reference:

- (a) Author's name in the normal order;
- (b) Title of work, underlined to indicate italics;
- (c) Place and date of publication;
- (d) Number of volume;
- (e) Pagination references (The page number).
- **(C)** Regarding Works Arranged Alphabetically: For works arranged alphabetically such as encyclopedias and dictionaries, no pagination reference is usually needed. In such cases the order is illustrated as under:

Example:

- 1 "Salamanca," Encyclopedia Britannica, 14th Edition.
- 2. "Mary Wollstonecraft Godwin," Dictionary of national biography.

But if there should be a detailed reference to a long encyclopedia article, volume and pagination reference may be found necessary.

(D) Regarding Periodicals Reference:

- (a) Name of the author in normal order;
- (b) Title of article, in quotation marks;
- (c) Name of periodical, underlined to indicate italics;
- (d) Volume number;
- (e) Date of issuance:
- (f) Pagination.
- **(E) Regarding Anthologies and Collections Reference :** Quotations from anthologies or collections of literary works must be acknowledged not only by author, but also by the name of the collector.
- **(F) Regarding Second-Hand Quotations Reference :** In such cases the documentation should be handled as follows :
 - (a) Original author and title;
 - (b) "quoted or cited in.";
 - (c) Second author and work.

Example : J.F. Jones, Life in Polynesia, p. 16, quoted in History of the Pacific Ocean area, by R.B. Abel p. 191.



- **(G)** Case of Multiple Authorship: If there are more than two authors or editors, then in the documentation the name of only the first is given and the multiple authorship is indicated by "et al." or "and others".
- (vii) Punctuation and Abbreviations in Footnotes: The first item after the number in the footnote is the author's name, given in the normal signature order. This is followed by a comma. After the comma, the title of the book is given: the article (such as "A", "An", "The" etc.) is omitted and only the first word and proper nouns and adjectives are capitalized. The title is followed by a comma.

The following is a partial list of the most common abbreviations frequently used in report-writing (the researcher should learn to recognise them as well as he should learn to use them):

- **(viii) Use of Statistics, Charts and Graphs :** Statistics are usually presented in the form of table, charts, bars and line-graphs and pictograms. Such presentation should be self explanatory and complete in itself. It should be suitable and appropriate looking to the problem at hand. Finally statistical presentation should be neat and attractive.
- (ix) The Final Draft: Revising and rewriting the rough draft of the report should be done with great care before writing the final draft. For the purpose, the researcher should put to himself questions like: Are the sentences written in the report clear? Are they grammatically correct? Do they say what is meant? Do the various points incorporated in the report fit together logically? "Having at least one colleague read the report just before the final revision is extremely helpful.
- (x) Bibliography: Bibliography should be prepared and appended to the research report as discussed earlier.
- (xi) Preparation of The Index: At the end of the report, an index should invariably be given, the value of which lies in the fact that it acts as a good guide, to the reader. Index may be prepared both as subject index and as author index.

Eduncle.com



🔼 🔲 Key Points & Revision Summary 🛄 🗷

• **Research and Date:** "Research Comprises defining and redefining problems, formulation hypothesis or suggested solution, collecting, organizing and evaluating data, making deduction and reaching conclusions and at last carefully testing to conclusions to determine whether they fit formulating hypothesis"

Types of Research

- (i) Descriptive Vs. Analytical
- (ii) Applied Vs. Fundamental
- (iii) Quantitative Vs. Qualitative
- (iv) Conceptual Vs. Empirical

Research Design: A research design is the arrangement of conditions for collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy in procedure.

Types of Data

- (i) Qualitative Data
- (ii) Quantitative Data
- (iii) Discrete Data
- (iv) Continuous Data

Sources of The Data

- (i) Primary Data
- (ii) Secondary Data
- Central Tendency: "An average is a single value within the range of the data which is used to represent all the value in the series. Since an average is somewhere within the range of the data. It is sometimes called a measure of central value.

Measures of Central Tendency

- (i) Arithmetic Mean
- (ii) Median
- (iii) Mode
- (iv) Geometric Mean
- (v) Harmonic Mean
- **Skewness:** "Skewness or asymmetry is the attribute of frequency distribution that extends further on one side of the class with the highest frequency on the other."

Measures of Skewness

- (1) Karl Pearson's measure
- (2) Bowley's measure
- (3) Kelly's measure
- (4) Moments measure
- **Correlation**: "Correlation means that between two series or group of data these exists some casual connection"

Types of Correlations

- *(i) Positive and Negative Correlation*
- (ii) Liner and Non-Liner or Curvilinear Correlation
- (iii) Simple, Partial and Multiple Correlation



🖎 📖 Key Points & Revision Summary 🛄 🗶

- **Regression Analysis:** "Regression is the measure of average relationship between two or more variables in term of the original unit of data.
- **Probability**: "The probability of the happening of any one of the several equally likely events in the ratio of number of cases favourable to it to the total number of possible cases."
 - (1) Classical Approach of probability or Mathematical or A prior probability.
 - (2) Relative frequency approach or empirical or statistical probability.
 - (3) Axiomatic approach or Modern approach to probability.

Probability Distribution

- (i) Binomial Distribution
- (ii) Poisson Distribution
- (iii) Normal Distribution
- (iv) Exponential Distribution
- Sampling and Estimation: Sampling is a process of selecting samples from a group or population to become the foundation on estimating and predicting outcome of the population. Sample is part of population.

Types of Sampling

- 1. Probability Sampling or Random Sampling
- 2. Non Probability Sampling or Non Random Sampling
- 3. Mixed Probability Sampling
- **Hypothesis Testing**: A statistical hypothesis is some assumption about a quantities statement of a population parameter which may be true or untrue and which is accepted or rejected after testing on the basis of the evidence from a random sample.

Basic Concept of Hypothesis

- 1. Null Hypothesis
- 2. *Alternative Hypothesis*
- 3. The Level of Significance (a)
- 4. Type I and Type II Errors
- 5. Error in Hypothesis Testing
- 6. Two Tailed and One Tailed Test

Parametric Test and Non-Parametric Test

The important parametric tests are:

- (1) z-test;
- (2) *t-test*;
- (3) *F-test*
- (4) χ^2 (chi-square) test and
- (5) Analysis of Variance (ANOVA)



🖎 🔲 Key Points & Revision Summary 🛄 🗷

Report Writing: Research report is considered a major component of the research study for the research task remains incomplete till the report has been presented and/or written.

Types of Reports

- (a) Technical Report
- (b) Popular Report

Mechanics of Writing a Research Report

- Size and Physical Design
- Procedure (ii)
- (iii) Layout
- Treatment of Quotations (iv)
- The Footnotes (v)
- Documentation Style (vi)
- (vii) Punctuation and Abbreviations in Footnotes
- (viii) Use of Statistics, Charts and Graphs
- The Final Draft (ix)
- Bibliography (x)
- (xi)Preparation of The Index

